

What is Claimed Is:

1. An indirect lighting system, comprising:
 - a light source;
 - an optical cavity for receiving light from the source and having a wall, wherein at least a section of the cavity wall is transmissive so as to pass a first portion of the light from the source toward a first field of illumination, and the section of the cavity wall is at least partially diffusely reflective so as to diffusely reflect some of the light from the source within the cavity;
 - a baffle that is at least partially transmissive, positioned outside the cavity wall, for passing at least some of the first portion of the light through to the first field of illumination;
 - an aperture of the optical cavity, facing toward a second field of illumination;
 - a mask outside the cavity spaced from the aperture and having a reflective surface facing toward the aperture, wherein the mask is positioned relative to the aperture so as to occlude a substantial part of the aperture and to thereby provide a tailored distribution of a second portion of the light emerging from between the mask and aperture over the second field of illumination; and
 - a support, for attaching the lighting system in relation to a face structure in such a manner that the diffused first portion of the light provides direct illumination in the first field, and the second portion of the light illuminates the second field onto the face structure for reflection and indirect illumination of the first field with reflected light from the second portion.
2. The system as in claim 1, wherein the source and cavity are arranged to provide emission of a third portion of the light from the source over a third field of illumination.
3. The system as in claim 2, wherein the arrangement of the source and cavity includes a port through the cavity wall, for emitting the third portion of the light from the source toward the third field of illumination.
4. The system as in claim 3, further comprising a deflector coupled to the port and having a reflective surface expanding outward as the deflector extends from the port toward the third field of illumination, for directing the third portion of light from the source over the third field of illumination.

5. The system as in claim 1, further comprising a reflective shoulder along at least a portion of a perimeter of the aperture.

6. The system as in claim 1, wherein the support is adapted to mount the lighting system on a wall or ceiling of a space to be illuminated by the system.

7. The system of claim 1, wherein the section of the cavity wall comprises a diffusely reflective material providing at least 85% reflectivity of the light from the source back within the cavity.

8. The system as in claim 7, wherein the section of the cavity wall is substantially white and exhibits a reflectivity of approximately 96% with respect to the light from the source.

9. The system of claim 7, wherein the reflective surface of the mask comprises a diffusely reflective material providing at least 85% reflectivity of the light from the source back within the cavity.

10. The system as in claim 9, wherein:
the section of the cavity wall is substantially white and exhibits a reflectivity of approximately 96% with respect to the light from the source; and
the reflective surface of the mask is substantially white and exhibits a reflectivity of approximately 96% with respect to the light from the source.

11. The system of claim 1, wherein the baffle is also at least partially reflective, so as to reflect some of the first portion of the light back toward the section of the cavity wall.

12. The system of claim 11, wherein the baffle comprises a substantially white diffuser.

13. The system of claim 12, wherein the diffuser comprises a translucent plastic material.

14. An indirect lighting system, comprising:
a light source;

an optical cavity for receiving light from the source and having a wall, wherein at least a section of the cavity wall is transmissive so as to pass a first portion of the light from the source toward a first field of illumination, and the section of the cavity wall is at least partially diffusely reflective so as to diffusely reflect some of the light from the source within the cavity, the cavity wall comprising a substantially white material providing at least 85% reflectivity of light from the source;

an aperture of the optical cavity, facing toward a second field of illumination;

a mask outside the cavity spaced from the aperture and having a reflective surface facing toward the aperture, wherein the mask is positioned relative to the aperture so as to occlude a substantial part of the aperture and to thereby provide a tailored distribution of a second portion of the light emerging from between the mask and aperture over the second field of illumination; and

a support, for attaching the lighting system in relation to a face structure in such a manner that the diffused first portion of the light provides direct illumination in the first field, and the second portion of the light illuminates the second field onto the face structure for reflection and indirect illumination of the first field with reflected light from the second portion; and

means for providing emission of a third portion of the light from the source over a third field of illumination.

15. The system as in claim 14, further comprising a partially transmissive baffle located outside the cavity, for processing and passing at least some of the first portion of the light to the first field of illumination.

16. The system as in claim 15, wherein the partially transmissive baffle comprises a diffuser, for diffusing light over the first field of illumination.

17. The system as in claim 14, wherein the means comprises a port for allowing emission of light from the cavity toward the third field of illumination.

18. The system as in claim 17, wherein the means further comprises a light deflector having a reflective surface coupled to the port.

19. The system as in claim 14, wherein the section of the cavity wall is substantially white and exhibits a reflectivity of approximately 96% with respect to the light from the source.

20. The system of claim 14, wherein the reflective surface of the mask comprises a diffusely reflective material providing at least 85% reflectivity of the light from the source back within the cavity.

21. The system as in claim 20, wherein:

the section of the cavity wall exhibits a reflectivity of approximately 96% with respect to the light from the source; and

the reflective surface of the mask is substantially white and exhibits a reflectivity of approximately 96% with respect to the light from the source.

22. A system for projecting electromagnetic radiation, comprising:

a source of the electromagnetic radiation;

an optical cavity for receiving the electromagnetic radiation from the source and having a wall, wherein at least a section of the cavity wall is partially transmissive so as to pass and diffuse a first portion of the electromagnetic radiation from the source toward a first field of illumination, and the section of the cavity wall is partially diffusely reflective so as to diffusely reflect a second portion of the electromagnetic radiation from the source within the cavity;

an aperture of the optical cavity, facing toward a second field of illumination; and

a mask outside the cavity spaced from the aperture and having a reflective surface facing toward the aperture, wherein the mask is positioned relative to the aperture so as to occlude electromagnetic radiation emerging from the cavity through the aperture with respect to the second field of illumination.

23. The system as in claim 22, further comprising a transmissive diffuser located outside the cavity, for diffusing at least some of the first portion of the electromagnetic radiation over the first field of illumination.

24. The system as in claim 22, wherein:

the source comprises a light source for emitting visible electromagnetic radiation; and

a reflective inner surface of the section of the cavity wall and the reflective surface of the mask are at least substantially white.

25. A lighting system, comprising:

a light source:

a diffuse reflector for diffusely reflecting light from the source:

a first transmissive diffuser for passing and diffusing a portion of light from the source and from the diffuse reflector, and for reflecting a portion of the light from the source and from the diffuse reflector;

a second transmissive diffuser for reflecting and diffusing a first portion of the light passed by the first diffuser and for passing a second portion of the light passed by the first diffuser, so as to transmit the second portion of the light passed by the first diffuser to a first field of illumination; and

a gap between the diffuse reflector and the first diffuser for allowing emission of additional light from the source over a second field of illumination.

26. The system of claim 25, wherein the first diffuser comprises a diffusely reflective cavity, and the diffuse reflector constructively occludes an aperture of the cavity with respect to the second field of illumination.

27. The system of claim 25, wherein the second diffuser also diffuses the light transmitted to the first field of illumination.

28. The system of claim 27, wherein the second diffuser is formed of a substantially white translucent material.